

Academic Year: (2018 / 2019)

Review date: 11-04-2018

Department assigned to the subject: Systems Engineering and Automation Department

Coordinating teacher:

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to Robotics
 - a. History and definitions
 - b. Classification and types of robots
 - c. Fundamental elements of robots
 - d. Perception and actuation in robotics
2. Massive robotic data processing
 - a. Artificial vision
 - b. Localization systems: Odometers.
 - c. Environment modelling (sonar, depth camera, Laser 2D, Lidar 3D).
 - d. Multi-sensory fusion
3. Real-time control of robots
 - a. Intelligent navigation
 - b. Hand manipulation
 - c. Reactive planning and control
 - d. Systems with hyper-degrees of freedom (humanoids, exoskeletons)
4. Robotic learning systems
 - a. Demonstration and deduction learning
 - b. Learning algorithms in robotics (neural networks, fuzzy, SVM)
 - c. Deep learning in robotics
 - d. Imagination in robotics
5. Applications in robotics
 - a. Outdoor applications (factories, surveillance, inspection)
 - b. Indoor applications (homes, hospitals, leisure areas)
 - c. Human-robot interaction (verbal, gestural, emotional)
 - d. Collaborative Robots
 - e. Future applications

% end-of-term-examination:	60
----------------------------	----

% of continuous assessment (assignments, laboratory, practicals...):	40
--	----